

## METHOD AND DEVICE FOR RECOGNIZING MOTION

### CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from Korean Patent Application No. 10-2015-0107962, filed on Jul. 30, 2015 in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference in its entirety.

### BACKGROUND

[0002] 1. Field

[0003] Methods and devices consistent with exemplary embodiments relate to recognizing a motion.

[0004] 2. Description of the Related Art

[0005] In an image-based method of recognizing a motion based on image data output from a frame-based vision sensor, a motion of an object represented based on a plurality of images is recognized. Each of the images includes static state information of the object such that a large number of images is required for recognizing the motion of the object based on the images. Therefore, in the image-based method of recognizing a motion based on image data output from a frame-based vision sensor, a large amount of operation and time are required according to a high complexity for performing an operation of the plurality of images such that an optimal performance of recognizing the motion may not be guaranteed.

### SUMMARY

[0006] Exemplary embodiments may address at least the above problems and/or disadvantages and other disadvantages not described above. Also, the exemplary embodiments are not required to overcome the disadvantages described above, and an exemplary embodiment may not overcome any of the problems described above.

[0007] According to an aspect of an exemplary embodiment, there is provided method of recognizing a motion of an object, the method including receiving event signals from a vision sensor configured to sense the motion, storing, in an event map, first time information indicating a time at which intensity of light corresponding to the event signals changes, generating an image based on second time information corresponding to a predetermined time range among the first time information, and recognizing the motion of the object based on the image.

[0008] The generating the image may include generating a first image including time information corresponding to a first time range among the first time information and generating a second image comprising time information corresponding to a second time range among the first time information, the second time range being different from the first time range.

[0009] The recognizing the motion may include determining context information based on the first image and recognizing the motion of the object included in the second image based on the context information.

[0010] The first time range may be wider than the second time range.

[0011] One end of the first time range and one end of the second time range may correspond to an identical point in time.

[0012] The recognizing of the motion of the object may include recognizing the motion of the object from the image based on a nerve network.

[0013] The event map may include a two-dimensional (2D) map corresponding to the vision sensor and include time information in which most recently generated changes in intensity of light correspond to the event signals.

[0014] The event map may include a three-dimensional (3D) map generated by adding a time axis to the 2D map corresponding to the vision sensor and include a time information history.

[0015] The vision sensor may include an event-based vision sensor configured to generate at least one event signal in response to an event in which light received from the object is asynchronously changed.

[0016] The first time information is information of a time at which the event signals are received from the vision sensor or information of a time at which the event signals are generated by the vision sensor.

[0017] According to an aspect of another exemplary embodiment, there is provided a non-transitory computer-readable storage medium storing a program that is executable by a computer to perform the method.

[0018] According to an aspect of another exemplary embodiment, there may be provided a device for recognizing a motion of an object, the device including a vision sensor configured to sense the motion and generate at least one event signal based on the sensed motion, and a processor configured to store, in an event map, first time information indicating a time at which intensity of light corresponding to the at least event signal is generated, generate an image based on second time information corresponding to a predetermined time range among the first time information, and recognize the motion of the object based on the image.

[0019] The processor may generate a first image including time information corresponding to a first time range among the first time information and generate a second image including time information corresponding to a second time range among the time information. The second time range may be different from the first time range.

[0020] The processor may determine context information based on the first image and recognize the motion of the object included in the second image based on the context information.

[0021] The first time range may be wider than the second time range.

[0022] One end of the first time range and one end of the second time range may correspond to an identical point in time.

[0023] The processor may be configured to recognize the motion of the object from the image based on a nerve network.

[0024] The event map may include a two-dimensional (2D) map corresponding to the vision sensor and comprises time information in which most recently generated changes in intensity of light correspond to the event signals.

[0025] The event map may include a three-dimensional (3D) map generated by adding a time axis to the 2D map corresponding to the vision sensor and include a time information history.

[0026] The vision sensor may include an event-based vision sensor configured to generate at least one event signal in response to an event in which light received from the object is asynchronously changed.